the animals also differ, and the crowning evidence of this distinction in a specific point of view, is the absence of all intermediate forms and varieties, each species preserving its integrity, under the operation of the same law that preserves the purity of species of *Unio*, where from 30 to 50 species are found in one stream, as is seen in some of the western rivers."

January 29th.

MR. LEA, President, in the Chair.

Thirty-three members present.

On report of the respective Committees, the following papers were ordered to be published in the Proceedings:

Description of a new Species of the Genus ANABLEPS of Gronovius.

BY THEODORE GILL.

There has recently been sent to the Smithsonian Institution from Panama, by Captain J. M. Dow, a new species of the genus *Anableps*. The number of the species of the genus is now increased to four, all of which, with the exception of the one now to be described, are from the Caribbean Sea, along the northern coast of South America.

Preliminary to a description of the new species, we give a diagnosis of the genus, in order not to be obliged to insert as specific characters those which are really generic.

Subfamily ANABLEPTINÆ Gill.

Genus ANABLEPS (Artedi) Gronovius.

Synonymy.

Anableps *Artedi, Linn.*, in first editions of Systema Naturæ.
Cobitis sp. *Linn.*, in later editions of Systema Naturæ.

Anableps *Gronovius* Zoophylacium.

Body elongated, anteriorly depressed, posteriorly compressed.

Scales moderate or small, cycloid, covering almost the entire head and body; those on the head, anterior to the nape, larger and less imbricated. The base of the caudal fin and the anal appendage of the male are also covered with scales.

Head depressed, cuneiform in profile, oblong above, gradually diminishing in width to the snout.

Mouth anterior and transverse, opening downwards and forwards. Upper jaw projecting beyond the lower. Intermaxillary bones with the ascending process represented by simple knobs. Maxillaries entirely lateral, and excluded from the composition of the mouth. Dentary flattened.

Teeth acute, only on the intermaxillaries and dentaries; in the former in a broad band, the anterior ones larger and moveable, as in *Pœcilia*; the posterior villiform and immoveable. Those of the lower jaw nearly horizontal and principally in one row on the front of the dentaries.

Eyes situated in the anterior half of the head, oblique, and protected by the elevated arches of the frontal bones. The cornea and iris are divided into two more or less unequal portions by a horizontal band.

Nostrils double; the anterior at the anterior and inferior edge of the nasal bones; the posterior oblique fissures in front of the eyes.

Branchiostegal membrane deeply excavated, the fissure extending to the anterior borders of the eyes. Branchiostegal rays five.

Dorsal fin higher than long, situated far behind, between the anal and caudal.

Anal in the females of nearly the same form as the dorsal; in the males with a large conical appendage in front.

Pectoral fins suboval, directed downwards and inwards, and externally concave.

Ventrals situated nearly midway between the pectoral and dorsal.

Prof. Jeffries Wyman has published interesting facts respecting the embryology of the *Anableps Gronovii* of Valenciennes (or *Anableps tetrophthalmus* Linn.) in the fifth volume of the Proceedings of the Boston Society of Natural History, page 80, and in the sixth volume of the American Journal of Science and Art.

Mr. J. P. G. Smith has published observations on the habits of a species of the genus in the Proceedings of the Zoological Society, for 1850, at page 53.

ANABLEPS DOWEI Gill.

The body is elongated, anteriorly depressed and flattened, and posteriorly compressed as in the other species of the genus. The height of the trunk, at the insertion of the ventral fins is nearly an eighth of the extreme length from the snout to the margin of the caudal fin. The width is greatest between the pectorals and ventrals, and equals fourteen-hundredths of the length; thence it nearly uniformly diminishes towards the base of the caudal fin, which is much compressed.

The head is elongated, semiconical in profile, above straight and continuous with the back. The height at the vertical of the operculum equals an eleventh of the total length. The length of the head itself enters five times in the total. The head above is flat and level from the nape, and between the raised orbits to the upper jaw; its breadth at the nape slightly exceeds two-thirds of its length; that before the eyes equal three-fifths of the same.

The eyes exceed in their diameter one-fifth of the length of the head; they are distant from the anterior borders of the nasals, a quarter of the head's length: the interorbital space equals a seventh of the same. The interval between the upper jaw and the angle of the preoperculum equals three-fourths of that between the jaw and the margin of the operculum.

The eyes are circular; the portion below the bridle of the conjunctiva is as large or larger than that above.

The dorsal fin commences between the posterior sixth and seventh tenths of the length. Its basal length is only equal to a twentieth of the total length, and scarcely exceeds half its height. Its median rays are highest, the margin being convex.

The anal fin of the male has nearly the same position and structure, as that of the same sex in *Anableps tetrophthalmus*.

The caudal fin is somewhat obliquely truncated, the lower rays being slightly longest. Its greatest length forms a sixth of the total. Its basal third is covered with closely adherent scales.

The pectoral fins do not quite equal in length a seventh of the total; they are separated from each other at their bases by an interval slightly exceeding half their length.

The ventrals commence between the fourth and fifth tenth of the total length; their length equals a tenth of the same.

In structure and form, the various fins do not differ from those of the allied species.

The number of rays is as follows: D. $8\frac{1}{1}$. C. 5, 16, 3. R. 21. V. 6.

From the axilla of the pectoral fin to the base of the caudal, there are about sixty-eight rows of scales, forty-nine of which are in advance of the dorsal. Each scale is more or less subcircular, often higher than long, with concentric striæ, surrounding a nucleus placed considerably anterior to the centre, and posteriorly crossed by about fourteen radiating striæ.

The color is a dark black brown on the head, back and sides. A broad, longitudinal, golden-colored band traverses the sides and terminates at the

caudal fin; the band is itself bordered with blackish below, which is much more distinct behind the ventrals. The sides of the head as well as the inferior surface of the body are also of a deep yellow color, the line bounding the yellow of the head passing under the eyes, and is continuous at the axilla of the pectorals with the lateral band. The dorsal, caudal and most of the pectorals, are of a lighter color than the back; the interior rays of the latter are yellowish.

A single specimen of this new species of *Anableps* was obtained by Captain J. M. Dow.

It is interesting as being the first representative of the genus that has been discovered on the Pacific coast. We dedicate the species to its discoverer, who has added much to our knowledge of the Fauna of the western coast of Central America, and who has forwarded to the Smithsonian Institution many new species of Fishes, Crustaceans, and other animals, among which is the type of the singular new Portumnoid genus *Euphylax* of Stimpson.

The following synopsis of the species of the genus will exhibit the comparative differences between them.

α. Squamæ in serie longitudinali cerciter 70. Color superne olivaceo-fuscus; fascia laterali et corpore inferne flavis.

ANABLEPS DOWEI Gill.

Synonymy.

Anableps Dowei *Gill*, Proceedings Acad. Nat. Sciences, supra 1860.

β. Squamæ in serie longitudinale 50—55; color superne olivaceo-virescens; lateribus lineis longitudinalibus tribus vel quatuor ornatis.

ANABLEPS TETROPHTHALMUS Bloch.

Synonymy.

Anableps lineis quatuor longitudinalibus ad utrumque latus; processu tubulato ad pinnam ani *Artedi* in Seba's Thesaurus rerum naturalium, vol. iii. pl. xxxiv. fig. 7, 1758.
" *Artedi*, Genera Piscium, p. 25, genus xx.
" " Species Piscium, p. 46.
Anableps *Gronovius*, Zoophylacium, p. 117, No. 350, pl. i. figs. 1, 2, 3.
" *Gronovius* Museum Ichthyologicum, vol. i. p. 12, No. 32.
Cobitis anableps, *Linnæus*, Systema Naturæ ed. x.
" *Linnæus*, Systema Naturæ, ed. xii., gen. 173, No. 1.
Anableps tetrophthalmus *Bloch*. Naturgeschichte der ausländischen Fische.
" " *Bloch*. Systema Ichthyologiæ, *Schneid.* ed.,
" " *Lacepede*, Hist. Nat. des Poissons, vol. v. 1803.
" " *Cuv. et Valenciennes*, Hist. Nat. des Poissons, vol. xviii. p. 252.

The preceding is only a portion of the synonymy of the species. On account of the remarkable structure of its eyes, it has been referred to in numerous works on Natural History and Anatomy. Such allusions have not been deemed of sufficient importance to refer to.

γ. Squamæ in serie longitudinali cerciter 85–90 ordinatæ. Color superne olivaceo-virescens, inferne albescens.

ANABLEPS MICROLEPIS Müll.

Synonymy.

Anableps microlepis *Müller* and *Troschel*, Monatsberichte der Acad. 1844, p. 36.

Anableps microlepis *Troschel*, Archiv. fur Naturgeschichte for 1845, vol. ii. p. 200 (abstract.)

Anableps coarctatus *Val.* Hist. Nat. des Poissons, vol. xviii. p. 266, pl. 540, 1846.

Anableps microlepis *Müll.* and *Troschel* in Schomburgh's Reisen in British Guiana, vol. iii. p. 632.

Corpus magnitudine fere ut in *Anableps tetrophthalmus.*

ANABLEPS ELONGATUS Val.

Synonymy.

Anableps elongatus *Val.* Hist. Nat. des Poissons, vol. xviii. p. 267, pl. 541, 1846.

Corpus gracilius.

On the classification of the EVENTOGNATHI or CYPRINI, a suborder of TELEOCEPHALI.

BY THEODORE GILL.

In studying the species of Cyprinoids obtained by Captain J. H. Simpson in his expedition across the continent in 1858–1859, we were led to investigate the principles of classification adopted for the arrangement of the family of Cyprinoids, as it has been restricted by most recent naturalists. Our studies have led us to the belief that the Cyprinoids do not form a natural family, but rather a suborder, and that the suborder itself may be divided into a number of natural families.

Suborder EVENTOGNATHI Gill.

This suborder embraces the numerous species known to the inhabitants of the United States as "Shiners," "Dace," "Roach," "Carp," "Suckers," &c., and is represented by species in the fresh water streams and lakes of almost every portion of the globe, with the exception of the continent of South America; they are there replaced by the herbivorous Characins.

Notwithstanding the cosmopolitan distribution of the suborder, there are few or no groups of fishes, whose mutual affinities are more unknown, and whose nomenclature and generic distinctions are so uncertain. Genera that are certainly very nearly allied, and even identical with each other, have been placed at almost opposite extremes of the family. Very closely allied species even have been equally far removed from each other, yet there are few groups which have been so much studied by naturalists as this has been.

The species of Asia have been especially studied by McClelland, Heckel, and by Dr. Bleeker; those of Europe, by Cuvier, Agassiz, Heckel, Kner, and the Prince of Canino. The American species have been arranged and described by Agassiz, Baird and Girard. All the known species found in every part of the world have been described by Valenciennes, and Bleeker has very recently published a synopsis of the entire suborder, in which all the known genera are described, and arranged in a new systematic order. With the full knowledge of all that has been done by those great zoologists, we have still no hesitation in asserting that much yet remains to be done, and that none of the proposed classifications or groupings of the genera and species are founded in nature.

The suborder, as understood by us, includes only the true Cyprinoids of Agassiz, without teeth in the jaws, and with large falciform lower pharyngeal bones. It thus excludes the *Cyprinodontoids*, and all allied groups. Thus restricted, it is an exceedingly natural group, and corresponds to the family of Cyprinoids of most naturalists. But in the suborder, there exist several groups which differ essentially in form or anatomical peculiarities, and which appear

to be entitled to family rank. The chief and typical family is much the most extensive and widely distributed. The others are small and much more restricted in geographical distribution.

The following synopsis will exhibit the most obvious characteristics of the different families, and their geographical distribution. We do not pretend to group the various genera into subfamilies or tribes, where so many have failed; it would be presumptuous for us, with the material at hand, to offer such an arrangement.

Family I. HOMALOPTEROIDÆ Gill.

Synonymy.

Homalopteræformes *Bleeker*, Natuurkundig Tijdschrift voor Nederlandsch Indie, vol. xx. p. 422 (subfamily.)

Balitora *Cuv. et Val.* Hist. Nat. des Poissons, vol. xviii. p. 91, (genus.)

The body and head are depressed, and the inferior surface plane. The mouth is inferior and of small size. The pectoral and ventral fins are in the same plane, horizontal and subdisciform. The pectoral fins have numerous and branched rays. There are no spines before any of the fins. The pharyngeal bones have a single row of conical teeth.

This family exactly corresponds to the subfamily of Homalopteræformes of Dr. Bleeker, and the characters above given are nearly translated from his. The species are peculiar to the streams of India.

Family II. COBITOIDÆ Fitzinger.

Cobitidæ *Fitzinger.*

Acanthopsides *Heckel and Kner*, Die Süsswasserfische des Ostreichischen monarchie, p. 296.

Cobitiformes *Bleeker*, Natuurkundig Tijdschrift voor Nederlandsch Indie, vol. xx. p. 421.

The body and head are never depressed, but either subcylindrical or slightly compressed. The scales are very small, and almost concealed in the smooth mucous skin. The mouth is subterminal, the snout being little protuberant. The lips are thick, and provided with from six to twelve barbels. The pectoral fins have a broad, vertical base, and are inserted in the usual manner on the sides above the breast. The pectoral fins have each a simple spine; the others are without. The pharyngeal bones have a single row of teeth. The branchial apertures are small and restricted to the sides.

This family is confined to the fresh-water streams and lakes of Europe and Asia, both temperate and tropical, and the islands of the Sunda Molluccan Archipelago. No species are found in either of the Americas. Are they not replaced in the latter continents by the fresh water Siluroids and Trichomycteroids?

The family may be divided in two different subfamilies, distinguished by the position of the dorsal fin. In the typical *Cobitinæ*, that fin is placed immediately over the ventral fins. In the other group, which may be called *Acanthophthalminæ*, the dorsal is situated over the space between the ventral and anal fins. Of the former four genera are known, and of the latter two.

Family III. CYPRINOIDÆ (Cuv.) Gill.

Synonymy.

Cyprinidæ *partim Agassiz*, auct.

Cypriniformes *Bleeker*, Natuurkundig Tijdschrift voor Nederlandsh Indie, vol. xx. p. 422 (subfamily.)

The body is oblong or moderately elongated, compressed or subcylindrical, and covered with conspicuous scales of various size.*

The barbels vary in number from two to four, and in numerous genera are even entirely absent. The pectoral fins have broad vertical bases inserted in the usual manner on the sides above the breast; they have each a simple ray. The dorsal and anal fins are either with or without spines, which themselves are either simple or dentated. The pharyngeal bones have one constant row of normally five teeth, or occasionally four, and often one or two supplementary rows of from one to three smaller teeth. The branchial apertures are of moderate size, and separated from each other by an isthmus of little or moderate width.

The Cyprinoids, as limited above, form a very natural and homogeneous group; its genera have not yet been satisfactorily divided among subfamilies, nor have even the genera been naturally approximated to each other. The distribution of the species is almost world-wide, South America being the only continent in which they are not found.

Family IV. CATASTOMOIDÆ Gill.

Synonymy.

Catastominæ *Heckel.*

Catastomini *Bleeker*, Natuurkundig Tijdschrift voor Nederlandsch Indie, vol. xx. p. 427 (stirps.)

Catastomus *Lesueur*, Journal of Academy of Natural Sciences of Philadelphia, vol. i. (genus.)

The body is moderately elongated and subcylindrical, or oblong and compressed, covered by conspicuous scales. The mouth is always concealed from above by the protuberant snout, and surrounded by fleshy lips. There are no barbels. The pectoral fins have their vertical bases inserted in the usual manner on the sides above the breast. The pharyngeal bones have numerous teeth closely approximated, like those of a comb, in a single row, and compressed at right angles to the bone. The branchial apertures are moderate, and separated by the isthmus.

The Catostomi have some external and anatomical characters peculiar to themselves and distinguishing them from the other families of this suborder. They are, therefore, now regarded as forming a distinct family. They appear to be peculiar to North America. A species of Cyprinoid from Siberia has been described by Tilesius, which has been generally referred to the genus *Catostomus*, but it is too little known to positively refer it to any known genus. As, however, there are arctic species of the family, the Tilesian species may quite possibly be a true member of the group.

The family of Catastomoids may be divided into three subfamilies, chiefly characterized by the form of the body and the comparative form and length of the dorsal and anal fins.

The Catastominæ have an oblong or moderately elongated and anteriorly subcylindrical body; the dorsal fin subcentral and nearer the snout than the margin of the caudal fin; it is short and subquadrate, with from eleven (3,8) to sixteen (3,13) rays. The ventral fins are under the anterior, median or posterior parts of that fin. The anal fin high and short, placed nearer the base of the caudal than of the ventral fins.

The Cycleptinæ are characterized by the elongated body, which is subcylindrical before, and by an elongated and falciform dorsal fin commencing over the interval between the pectoral and ventral fins, and extending as far back as the beginning of the anal fin.

* The genera *Aulopyge* of Heckel, *Phoxinellus* of Heckel and *Meda* of Girard are destitute of scales.

The third subfamily is composed of species having an oblong-oval and compressed body. The dorsal fin is elongated, commencing over or before the ventral fins and proceeding backwards at least as far as the commencement of the anal fin; the anterior rays are usually much longer than the others. To this group the name of *Bubalichthyinæ* may be given. *Carpiodes* is the typical genus, but it would scarcely be proper to modify that name by the termination indicating a subfamily; we have therefore accepted the above modification of the name *Bubalichthys* of Agassiz proposed for a genus of this subfamily.

Note on Ants in Texas.

BY S. B. BUCKLEY.

The cities of the Cutting Ant (Myrmica Texana) are sometimes much larger than those described by me in an article published in the Journal of the Academy. During the summer, I have measured some which extended beneath a surface having an average diameter of seventy feet; and in one instance, their town was spread beneath an area of about one hundred feet. Their cellars, from six inches to two and three feet in diameter, are beneath this surface to the depth of from twelve to eighteen feet. The dirt brought up is in the form of a crater, to the edge of which they carry the ground excavated, where it is dropped, and rolls down the sides of the volcano-like hill, which is seldom more than eighteen inches high. The storms level the hills, and new ones are formed on them, until the dirt excavated is sometimes three feet deep. A new city, or when more rooms are made in an old one, has at the surface the appearance of a model volcanic region with isolated craters and mountain ranges. In an old established town the surface of the ground around the main entrances is nearly level, in order that stores for home use may be easily brought in along their roads, extending into the country in all directions. Besides these paths there are underground avenues—as was mentioned in a former paper—whose outer doorways are several hundred feet distant from town, through which most of the grain and leaves used by them is carried. The digging of these tunnels is begun near the lower cellars, from whence they are extended to the outer entrances, around which excavated dirt is seldom if ever found. That they store up food is very probable, nor can there be much doubt of it, since it is well known that they often abstain from work during several days in succession in the winter time. It is also well known, in the region infested by them, that they carry large quantities of grain and leaves into their abodes. I have often seen the margins of their paths covered with segments of green leaves, where they are left to dry, after which they are taken below. The green fruit of the elm is treated in a similar manner. It is true that leaves and fruits are carried into town in a green state, but they surely would not dry a portion unless they wished to preserve it for future use. They do most of their work in the night time, especially in the summer season, when they do not labor during the heat of the day. On one occasion our tent was inadvertently erected near one of their towns, and as we were about to spread our blankets for sleep, we found the ground almost covered with ants. We were driven to platforms for slumber. In the meantime the ants were actively engaged in carrying home fragments of biscuit and other things which had been dropped from our table; other parties of them packed the grains of corn strewed on the ground near the feed box of our mules and horses. I had been told that "cutting ants" could carry the largest grains of corn, but did not believe it; but at that time I saw some big grains move slowly along the ant path, and on close scrutiny could see that said grains were carried on the backs of the little ants. We were encamped near Judge Eastland's, in Bastrop County, and the next morning the Judge brought over some bits of lead immersed in molasses, to test the strength of the ants. The pieces of lead were three and four times

larger than the ants, yet the ants being fond of sweet would struggle, until they succeeded in getting the sweetened metal on their backs, when they marched homeward. They are not fond of salt, and would not eat bacon or beans which had been cooked with it.

Among these ants are some big-headed giants who apparently are rulers and superintendents. I have frequently seen them move among the crowd here and there, as if to see that all were on duty. Not working themselves, they urge others to the task. It is said they punish delinquents by biting and shaking them, but I have not seen any such penalty inflicted. It may be that these large ants are the elders whose age exempts them from labor, and entitles them to the respect and submission of the younger of this community.

A gentleman in Bastrop County told me that to preserve his shelled grain and meal from the "cutting ants" it was suspended in sacks by tarred ropes; fresh tar being occasionally added. It is difficult for them to shell corn; hence corn in the ear is rarely disturbed by the "cutting ants." I have not met with these ants north of latitude thirty one degrees, but how far east or west they extend I cannot tell. They are more numerous in the vicinity of rivers and water, but I have never seen their abodes in a bottom subject to overflow.

When I was in Lampasas County last October, at Swenson's Saline, on a hillside, I overturned a large rock, which left exposed a number of the cellars of the stinging ant, (Myrmica malefaciens.) In some of these cellars were large quantities of the seeds of the amaranthus and other plants, nicely stored for future use. A gentleman in San Saba County informed me that, after a heavy rain, the "stinging ants," at one of their dens near his wheat field, brought up at least half a bushel of wheat and spread it around their outer door to dry, after which it was again conveyed below.

In this climate, where during the winter cold and warm weather alternately prevail, many species of ants do not become torpid; but in their deep cellars where the cold does not come, they lay up food for use in times of northers, and when the warm weather comes their labors are renewed. It is seldom that they are hindered by cold from work more than a week at any one time.

Descriptions of new Species of Scolopendra, in the collection of the Academy

BY HORATIO C. WOOD, JR.

S. b y s s i n a, nobis.

S. saturate viridis, capite castaneo; antennis ? 18 articulatis; dente mandibulari gracile. dentibus labialibus 10, parvis, nigris; superficie ventrali brunneo-olivacea; pedibus gracilibus, antennisque luteolis, postremis articulo basali intus 3, subtus 2 spinis, processu angulari bifido vel trifido; appendicibus analibus lateralibus punctatis, singula spinis apicalibus 3. Long. unc. 3.

Hab. Florida?

S. p a r v a, nobis.

S. viridi-brunnea, segmentis plerumque saturatè viride marginatis; antennis viridibus, 25 articulatis; dentibus 8, nigris, obtusis; pedibus postremis robustis, articulo basali margine haud elevato, intus 5 spinulis, subtus 12–15 spinulis, processu angulari magno, quadrifido; appendicibus analibus lateralibus punctatis, singula spinis apicalibus 4–5 et altero marginale armata. Long. unc. 3.

The first segment of the body is the smallest, the third next. The sutures between sternum and episternum well marked, those between scuta and episcuta barely traceable. The preterminal scuta is very large, its lateral margins in all our specimens are regularly arched. The terminal scuta has a strongly depressed central groove, marking, we suppose, the line of embryonic coalescence of the two primitive scuta.

Hab. Mountains of Georgia. Dr. LeConte.

S. castaneiceps, nobis.

S. viridis, capite antennisque castaneis; segmentis margine posteriore caeruleo tincto; antennis 25 articulatis; dente mandibulari producto, gracile; dentibus labialibus 10, intimis tribus utrinque coadunatis; pedibus plerumque luteolis; postremis saturate viridibus, articulo basali intus quinquespinoso, subtus spinis 9 serie triplici dispositis; appendicibus analibus lateralibus brunneis, elongatis, singula spinis apicalibus 5; superficie ventrali sordidé viride. Long. unc. 3·75.

Prebasilar fold connate with basilar segment; the suture, however, well marked, existing as a deep groove. First pair of legs tinged with chestnut. Preanal scale quadrate, much narrowed posteriorly, impressed with a longitudinal sulcus.

Hab. Texas. Dr. Rand.

S. polymorpha, nobis.

S. olivaceo-brunnea, capite dilute castaneo; antennis 30 articulatis, pedibusque luteolis; dente mandibulari tuberculo basali magno; dentibus labialibus 8, maximis, intimis duobus utrinque coadunatis, externis sejunctis; segmentis margine posteriore nigro-viride, marginis lateralibus plerumque liberis; pedibus postremis robustis, articulo basali intus 7–10 spinis, subtus 8–12 spinis armato, processu angulari aut bifido aut trifido aut quadrifido; appendicibus analibus lateralibus, singula 4–5 spinis apicalibus. Long. unc. 3.

Prebasilar fold apparent, but connate with the rather large basilar segment. First segment of body very small, suture between scutum and episcutum barely traceable, that between sternum and episternum much more distinct. Basal joint of last pair of legs, above flattened and apparently grooved, below very convex; the internal surface having near to its proximal end a group of from five to seven spines, and several scattered ones on its distal portion; lower surface with from eight to ten spines disposed 1 in rows. This may be considered the typical arrangement, but we have very numerous departures from it; in some individuals the spines are irregularly scatttered over the whole interior and inferior surfaces. The color also varies greatly, shading off from that given above, to a testaceous-chestnut, the posterior green bands entirely vanishing. Even the characters drawn from the labial teeth are not constant in this perplexing species, these organs in some individuals being small and coadnate. One of our testaceous specimens has attained to the length of three and one-half inches.

Hab. Fort Riley, Kansas. Presented by Dr. Hammond.

S. prasinipes, nobis.

S. obscuré nigro-viridis, segmento cephalico cordato, basali magno; capite subtus rufo; pedibus, postremis exceptis, antennisque laeté prasinis; mandibulis rufis, dente magno; dentibus labialibus 6, intimis duobus utrinque latis, coadunatis, externo acuto, sejuncto; pedibus postremis, singula articulo basali rufo, multispinoso, processu angulari 4–5 spinis armato; appendicibus analibus lateralibus elongatis, singula 4–5 spinis. Long. unc. 10·25.

Dental plates small, quadrate, punctate. Suture between scuta and episcuta well marked. Distal extremity of the femoral joints of all the anterior legs with from three to four spines, of the metatarsæ with one. First joint of posterior pair of legs the longest, somewhat flattened above. Preanal scale quadrate, much narrowed posteriorly.

Hab. Island of Trinidad.

S. epileptica, nobis.

S. rufo-castanea, robusta, capite segmento basali maximo; dente mandibulari magno; dentibus labialibus 8, internis tribus utrinque valde coadunatis; antennis 17 articulatis, elongatis; scuta terminali media subcarinata; superficie ventrali laeté castanea; pedibus plerumque luteolis; postremis magnis, articulo basali spinis validis 20–25, processu angulari magno, multifido, articulo tibiali spinis 1–3; appendicibus analibus lateralibus minuté punctatis, singula spinis apicalibus 5–7; squama preanali elongata. Long. unc. 9.

Prebasilar fold connate with basilar segment, the suture however well marked, existing as a deep groove. First segment of the body very much the smallest. Antennae generally yellowish, in some specimens chestnut. Scuta generally much widened posteriorly, their lateral margins arcuate and furnished with an elevated crest. Posterior margin of terminal scuta very strongly arcuate, the lateral borders, however, almost straight. Suture between scuta and episcuta traceable in most of the segments. Distal extremities—of femora of all the anterior legs armed, each, with a tubercle bearing from two to four small spines—of tibiæ with a single minute spine—of metatarsae, with a longer but very slender one; claw large, furnished with two spines at its base. Femoral joints of last pair of legs longer than tibial, somewhat flattened above, each armed—on superior surface with six spines, forming two triangles—on internal margin and surface with from ten to twelve,—on inferior surface with from four to six.

Hab. Unknown.

S. limicolor, nobis.

S. diluté castanea, antennis 18 articulatis; dente mandibulari amplo, gracile; dentibus labialibus 10, intimis utrinque quatuor valde coadunatis, extimo sejuncto, acuto; pedibus postremis gracilibus, basali articulo utrinque bispinoso, processu angulari bifido; appendicibus analibus lateralibus punctatis, spina terminali simplice. Long. unc. 4·5.

Prebasilar fold absent: basilar segment large. Color of belly and feet very similar to that of the back, perhaps a little lighter. Preanal scale much narrowed posteriorly, short. Sutures between scuta and episcuta, and between sternum and episternum, well marked.

Hab. Bengal.

S. gracilipes, nobis.

S. brunnea, segmento cephalico parvo, prebasali nullo, basali maximo; antennis 20 articulatis; dente mandibulari et tuberculo basali magnis, dentibus labialibus 8, parvis, multo coadunatis; pedibus postremis gracilibus, articulo basali 7 spinulis in serie duplici dispositis; appendicibus analibus lateralibus elongatis, punctatis, singula 3 spinulis armata; squama preanali posticé emarginata. Long. unc. 3.

Color brown, with a lighter narrow stripe along centre of dorsum. Posterior margin of sternal plates rounded. Terminal angular process of last pair of legs scarcely developed. Our specimen is probably a young animal.

Hab. Singapore. Presented by Sandwith Drinker.

S. dinodon, nobis.

S. saturate brunnea, segmento cephalico magno, prebasali nullo, basali magno: antennis 18 articulatis, pubescentibus; dente mandibulari maximo, dentibus labialibus 12, parvis, nigris; pedibus postremis, singula articulo basali intus spinis magnis 3–4, subtus 2, armato; processu angulari elongato, obscure trifido; appendicibus analibus lateralibus punctatis, spinis apicalibus utrinque 3, parvis. Long. unc. 5.

Last pair of legs, as well as mandibles, inclining to rufous; femoral joint a little longer than tibial, flattened above; terminal angular process terminating in a large spine with two very small ones at the base. Sterna marked on posterior border with three light colored dots, the middle one being generally much the most conspicuous. Preanal scale somewhat elongate, impressed with an obsolescent longitudinal sulcus.

Hab. Singapore. Presented by Sandwith Drinker.

S. cephalica, nobis.

S. diluté castanea, robusta, capite amplissimo; dente mandibulari magno, dentibus labialibus 10, nigris, tuberculis similibus, vix coadunatis; antennis 19 articulatis; segmentis alternis minoribus; pedum postremum basali articulo

utrinque bispinoso, processu angulari simplice ; appendicibus analibus lateralibus punctatis, spinâ apicali interdum bifidâ. Long. unc. 4–5.

The first segment of each pair is the smaller, until we reach the fourth couple, where the order is reversed and so continues to the end. The scuta of the preterminal segment is remarkable for its size and has its posterior angles rounded. The suture between the scuta and episcuta is obsolete, that between the sternal and episternal plates very distinct.

Hab. West Coast of Africa. Presented by John Cassin.

? Var. g r a c i l i s.

S. cephalicæ similima, adhuc multo gracilior; cephalico segmento et dente mandibulari multo minoribus ; segmentis alternis minus inequalibus; dentibus labialibus acutioribus. Long. unc. 5·75.

Having but a single individual of each of these forms we prefer to retain this as a variety, although it will perhaps be found to be a distinct species. The two specimens are very different in their general appearance, but agree remarkably in their minute characteristics.

Hab. With the last. Presented by John Cassin.

S. p a r v i d e n s, nobis.

S. olivaceo-viridis ; segmento cephalico, antennis pedibusque luteolis ; segmento prebasali nullo, basali magno; dentibus 10, parvis; pedum postremum articulo basali spinis 4–6 armato, processu angulari elongato, bifido vel trifido ; appendicibus analibus lateralibus luteolis, punctatis, singula spinis apicalibus 2. Long. unc. 4.

Head darker than antennæ, feet, &c., mandibular tooth rather large. Ventral surface drab. Sutures between sternal and episternal plates distinct. Posterior margin of terminal scuta strongly arcuate. Femora of last pair of legs longer than tibiæ, superior surface flattened and in one of our specimens slightly grooved. Preanal scale, quadrate, slightly narrowed posteriorly, posterior margin rounded.

Hab. Ningpoo, China. Dr. D. B. B. McCartee.

S. t o r q u a t a, nobis.

S. dilute ochracea, capite segmentisque postremis rufis ; segmento prebasali nullo, basali maximo; antennis 17 articulatis, laeté luteis; dente mandibulari magno, dentibus labialibus 6, obtusis ; segmentis posticé diluté viride marginatis ; superficie ventrali pedibusque anterioribus luteis ; pedibus postremis gracilibus, castaneis, articulo femorali elongato, 30–40 spinulis nigris armato, processu angulari multifido. Long. unc. 4.

First segment of body much the smallest; color of back approaches somewhat to a faded chestnut, the posterior segments losing the green margin, but obtaining a much redder hue. Distal extremity of last pair of legs, tinged with olive green. Lateral anal appendages sub-quadrate, their posterior margin rather sharp and provided with a minute black spine, their terminal process provided with 7 similar ones. Suture between scuta and episcuta better marked than that between sternum and episternum. Our specimen is perhaps not an adult.

Hab. Sombrero Island.

S. p e l l a, nobis.

S. olivaceo-brunnea, capite castaneo, segmento prebasali nullo, segmento basali maximo; antennis 20 articulatis ; dente mandibulari magno ; dentibus labialibus 10, nigris, tribus internis utrinque valdè coadunatis ; pedum postremorum articulo basali et secundo marginibus elevatis ; illo, margine interiore 4–5 spinis, superficie inferiore 8–9 spinis serie triplici dispositis, processu angulari trifido vel quadrifido ; appendicibus analibus lateralibus punctatis, singula, 4–5 spinis apicalibus. Long. unc. 3.

Dental lamina somewhat elongate. Basilar tubercle of mandibular tooth

often composed of an aggregation of minute tubercles. Basal joint of last pair of legs a little longer than tibial, the superior surface flattened, inferior convex, raised margin not so prominent as that of the tibia. Breadth of preanal scale rather great proportionably to its length.

Hab. Surinam. Dr. Calhoun.

S. p u n c t i s c u t a, nobis.

S. olivacea, capite rufo-castaneo, segmentorum corporalium margine posteriore et pleurumque anteriore viridis; superficie ventrali castanea; antennis 17 articulatis; dentibus 8, parvis, nigris, intimis tribus utrinque valde coadunatis; pedibus antennisque flavescentibus; pedis postremis articulo basali supra bispinoso, intus sexspinoso, subtus septemspinosa, processu angulari trifida; tibiali articulo 5 spinis; appendicibus analibus lateralibus punctatis, elongatis, singula 3–4 spinis apicalibus et altero marginale armatis. Long. unc. 4·75.

Cephalic as well as large basilar segment punctate, impressed with sutures, between some of the plates, which are separate during embryonic life. Suture between scuta and episcuta, and in one or two instances between the two true scuta well marked. Scuta punctate and finely chased on posterior border. Distal extremities of metatarsæ of all anterior legs provided with a slender spine; claw armed with a small one near its base. Preanal scale quadrate, narrowed posteriorly.

Hab. Caraccas. W. G. Boulton, Esq.

S. p u n c t i c e p s, nobis.

S. brunneo olivacea; segmento basali maximo; antennis 17 articulatis; dente mandibulari magno, robusto; dentibus labialibus 6, validibus, intimis duobus utrinque coadunatis, extimo sejuncto; laminis dentalibus excavatis; pedibus postremis elongatis, articulo femorali spinis 15–20, processu angulari trifido, articulo tibiali spinulis 3–5 : appendicibus analibus lateralibus saturaté brunneis, singula spinis apicalibus 2–3 et interdum altero marginale. Long. unc. 4 5.

Cephalic segment punctate: prebasilar fold connate with basilar segment, the line of junction, however, indicated by a deep furrow in the latter. First segment the smallest, the third next. Suture between the scuta and episcuta, well marked in middle segments of the body. Distal extremities of the femoral joints of the nineteenth and twentieth pairs of legs provided with from two to four small spines.

Hab. Unknown.

S. a t r a, nobis.

S. brunneo-atra, segmento cephalico magno, prebasali nullo, basali maximo; dente mandibulari maximo; dentibus labialibus 12, conicis, vix coadunatis; pedibus postremis gracilibus, articulo femorali spinis 4–5 armato; appendicibus analibus lateralibus elongatis, singula spinis apicalibus 2. Long. unc. 4·75.

Color of whole animal brownish black with an almost metallic reflection on the back and a reddish tinge about the head. The scutal plate of preterminal segment is very large, equalling any other in size. Preanal scale impressed with a longitudinal sulcus, its posterior border greatly rounded.

Hab. Unknown.

S. p l u m b e o l a t u s, nobis.

S. olivaceo-brunnea, segmento cephalico obscuré castaneo, prebasali nullo, basali magno; dente mandibulari magno, gracile; dentibus labialibus 10, parvis, nigris; antennis 18 articulatis, sordidé luteolis; lateribus plumbeis; pedibus postremis gracilibus, articulo femorali 5 spinis, processu angulari interdum bifido; appendicibus analibus lateralibus punctatis, spinis apicalibus utrinque duobus. Long. unc. 4.

First, third and fifth segments the smallest. Posterior margin of some of

the scuta tinged with green. Suture between sternum and episternum well marked. Legs of anterior portion of body, a dirty light yellow, gradually darkening as they approach the anus.

Hab. St. Jago, Cape Verde Islands. Dr. J. M. Somerville.

S. testacea, nobis.

S. testacea, segmento cephalico parvo, prebasali nullo, basali maximo; dentibus 6, intimis duobus utrinque latis coadunatis, externo sejuncto triangulari; antennis 17 articulatis; pedibus postremis robustis, basali articulo multispinoso; appendicibus analibus lateralibus, punctatis, rufis, singula 4–6 spinis apicalibus et altero marginale. Long. unc. 5.

First segment of body much the smallest. Femoral joint of posterior pair of legs flattened above; inner surface and margin with from fifteen to twenty small black spines; inferior surface with from ten to fifteen; terminal angular process with from six to eight.

Hab. Unknown.

S. porphyratainia, nobis.

S. testacea, capite antennisque rufis; segmentis, (postremo excepto,) antice et postice nigro-purpurea late marginata; pedibus luteolis; dente mandibulari magno, dentibus labialibus 10, nigris; antennis 20 articulatis; pedibus postremis robustis, basali articulo margine exteriore vix elevato, margine interiore spinulis 5, processu angulari elongato, trifido vel quadrifido, superficie inferiore spinulis 9 triplici serie dispositis; appendicibus analibus lataralibus alte punctatis, singula spinis apicalibus 4–5 et altero marginale armatis. Long. unc. 4·75.

The last dorsal plate has its lateral margins elevated and its posterior tinged with purple. The posterior border of the large basilar segment of the head has also a narrow band of purple. The broad bands which ornament the segments of the body extend down somewhat upon the sides; in the day time they have in some lights a slight greenish reflection. This species is allied to *S. tigrina* Newp.; but, besides the peculiar coloration, it differs in the following particulars: In the number both of joints of antennæ and of labial teeth, in the scarcely elevated margin of femoral joint of last pair of legs, in greater length of this joint compared with tibial, in two of the series of spines on inferior surface of the joint being parallel, in the robustness of posterior pair of legs, in greater number of apical spines to lateral anal appendages and other particulars. The antennæ appear to have been tipped with white.

Hab. India.

Observations on Cottus Copei, Abbott.

BY CHAS. C. ABBOTT.

Having received a living specimen of the above named species, I deem it necessary to make a re-diagnosis of the species, as the original specimen, having been an alcoholic one, and somewhat distorted, led to several errors, which it is important to correct.

This species is closely allied to Cottus viscosus, *Hald.* and C. Franklinii, *Agass.*, but differs essentially from the former *in the facial outline, from the eye, making a much less abrupt curve; thus giving the snout greater attenuation. In the mouth being more deeply cleft, and much more obliquely. In the body being strictly cylindrical, and not subcylindrical.* It differs from C. Franklinii, *in the tips of the pectorals overreaching the anterior margin of the second dorsal. In the anterior margin of the first dorsal being farther distant from the extremity of the snout. In the body, as it differs from* viscosus. The proper diagnosis will then be

Cottus Copei, *Abb.*—Corpore cylindrico. Extremitatibus pinnarum pectoralium porrectis ad anteriorem dorsalis secundæ marginem. Pinnis ventralibus sub pectorales et ante dorsalem anteriorem, insertis.

Appendix to the "Monograph of the PHILYPNI," and description of the genus LEMBUS of Günther.

BY THEODORE GILL.

In the Proceedings of the Academy of Natural Sciences for April, 1860, (pages 120 to 126,) there has been given a monograph of the *Philypni*, of which two genera, represented by three species, were described. Some time after the publication of that memoir, the first volume of the "Catalogue of the Acanthopterygian Fishes" of the British Museum, was received. Dr. Albert Günther, the author, among the addenda of that volume, has described a new generic form founded on a species discovered by Mr. Fraser in the Andes of Ecuador; the new genus was named *Lembus*, and is said to be "a true representative in South America of the Perches of the Arctic regions." In its general appearance, it is stated to resemble *Lucioperca*, or some of the other elongate Perches.

A perusal of the generic and specific diagnoses of Dr. Günther has convinced us that there must be some error in the reference of his new form to the family of Percoids.

In the diagnosis of the genus, there is said to be *no lateral line*, and the first dorsal has seven *slender spines*.

In the specific description, the branchiostegal membrane is stated to be "*fixed to the isthmus*, without touching that of the other side," and "the ventral is inserted exactly under the pectoral, and composed of one feeble spine and five rays, the *fourth of which is the longest*, nearly reaching to the vent." "The pseudobranchiæ are absent." "The opercles are neither serrated nor armed.

As none of these characteristics are common to the true Percoids, great doubt may be entertained as to the propriety of referring a fish with such features to that family. And as in all of those same characters, it resembles the Gobioids, and especially the Eleotroid genera, we entertain little or no doubt that it is really a member of the same family.

One of Gunther's generic characters is the presence of a "band of villiform teeth on the jaws *and on the vomer*." There are six branchiostegals. The genus, therefore, belongs to the group of *Philypni*.*

The scales are described as "*rather small*, ctenoid, pentangular, with the basal margin vertical." This form of the scales is a common feature of the Gobioids with ctenoid scales, and although only the descriptive phase "ctenoid" is applied, it is not to too much to infer that, like its allies, *Lembus* has the scales simply pectinated on their posterior margins. The form of the body is described as resembling that of *Lucioperca; Lembus* is consequently on account of the size and pectination of the scales, and the general form of the body, more nearly allied to *Philypnus* as restricted by us than to *Bostrichthys*. The true generic characters, so far as can be gathered from the description, appear to be the following:

Lembus Günther.

Synonymy.

Lembus *Günther*, "Catalogue of the Acanthopterygian Fish," &c., vol. i. p. 505, 1860.

Head elongated, above depressed, and flat between the eyes. Mouth large, the supramaxillary bones extending to or beyond the vertical of the anterior border of the eye; lower jaw projecting beyond the upper; nostrils distant;

*The pseudobranchiæ are absent, so far as yet known, only in the genera *Cnidon* of Muller and Troschel, and *Lates* of Cuvier among the *Percoids*. The preoperculum is sometimes entire in some of the Percoid genera, but the operculum has always one or more spines. The Etheostomoids have the inner rays of the ventrals longer than the external, but they are much more nearly related to Gobioids than to Percoids.

the posterior is near the upper angle of the orbit; the anterior is minute, and close to the upper extremity of the maxillary bone. Eyes of moderate size. Branchial apertures lateral. Scales ctenoid, at least on the trunk; small scales extending over the entire head, except the snout. Anterior dorsal fin with seven rays.

From the above description, it is evident that the genus is very nearly allied to *Philypnus*, and may perhaps be even identical with it. It probably, however, differs by having the branchial apertures more restricted and not extending so far forwards; by the more distant nostrils, which are not described as having raised margins, and possibly the smaller size of the scales on the head. The anterior dorsal has also seven rays, while *Philypnus* has only six, in common with most of the Gobioids. But all of these distinctions remain to be verified, and it is hoped that the author will give the true characters in that volume of his work in which the Gobioids will be described.

Although Dr. Günther appears to have been undoubtedly mistaken as to the affinities of his genus *Lembus*, the excellence and appropriateness of his description have left us in no doubt as to its true relations. The genital papilla is not mentioned as being present, but it was undoubtedly overlooked.

A single species of *Lembus* is known.

LEMBUS MACULATUS Günther.

Synonymy.

Lembus maculatus *Günther*, Catalogue of the Acanthopterygian Fishes, &c., vol. i. p. 505.

The species is thus characterized by Günther:

"Yellowish, irregularly spotted with blackish, back with five dark crossbars; a black blotch behind the extremity of the operculum; three blackish streaks radiating from the eye, the vertical fins dotted with blackish."

There are fifty-seven scales in a longitudinal line, and twenty-two (?) in a transverse line.

The radial formula is is B. 6. D. vii. I. 9, A. ii. 9.

There are now known, if *Lembus* is really distinct from *Philypnus*, three genera of the Philypnoid group.

I. PHILYPNUS Val.

Represented by species dwelling in the seas, on the eastern and western sides of tropical America, and ascending the fresh water streams.

II. LEMBUS Günther.

With one species inhabiting the mountain streams of Ecuador.

III. BOSTRICHTHYS (Dum.) Gill.

Peculiar to the temperate and tropical waters of eastern and southern Asia.

NOTE. In the Proceedings of the Zoological Society for January to June, 1860 page 236, which we have only now seen, Dr. Günther has remarked that his *Lembus maculatus* has "a prominent papilla near the vent, and is nearly allied to *Philypnus*." We take much pleasure in recording Dr. Günther's own correction of his error. It is at the same time due to ourselves to remark that we had shortly after the reception of the "Catalogue of the Acanthopterygian Fish," alluded to, in letters to two ichthyological friends, the affinity of *Lembus* and *Philypnus*, and that we had at nearly the same time in conversation with several others, expressed the same opinion. We allow the remarks and descriptions to stand that we then composed.

Synopsis of American Cretaceous Brachiopoda.

BY W. M. GABB.

The paucity of species of this order in the cretaceous formation of North America is worthy of note. Among nearly a thousand species of mollusca, not a dozen, in all, have as yet been discovered and characterized. This arises doubtless from the fact that the only beds of the formation, yet demonstrated on this continent, belong to the higher members. The upper chalk comprises all the strata east of the Mississippi, and *may* include all west of that stream, although palæontological evidence seems to indicate the existence of the lower chalk, in the strata designated as Nos. 1 and 2 of Meek and Hayden's section in Nebraska, as well as part, if not all, of No. 3 of the same authors. The same deposits appear to exist in Texas, and may be found to cover a large extent of the yet unexplored regions of the West. Two or three upper greensand fossils have been mentioned as occurring in Texas, but as far as my opportunities of comparison have gone, I am satisfied that they are distinct. This is the case with the two species referred by Dr. Rœmer, in his "Kreidebildungen von Texas," to *Pecten virgatus*, Nils., and *Trigonia crenulata*, Lam.

TEREBRATULA, Lam.

T. Harlani, Morton. Silliman's Journal, v. 18, pl. 3, f. 16.
T. perovalis, M., *not Sow.* Jour. Acad. Nat. Sci., i. ser., v. 6, pl. 3.
T. camilla, M. Syn. 70.
T. Harlani, M. Syn. 70, pl. 3, f. 1, and pl. 9, f. 8, 9.
T. fragilis, Morton, *not Schlot.* Jour. Acad. Nat. Sci., v. 6, p. 75, pl. 3, f. 3, 4.
T. Atlantica, M. Jour. Acad. Nat. Sci., i. s., v. 8, p. 214.
T. subfragilis, d'Orb. Prod. Pal. v. 2, p. 258.

This species appears to be rather common in New Jersey. I have seen a deposit in the marl pits of Hon. Nathan Stratton, near Mullica Hill, N. J., almost entirely made up of the broken shells. In other places they are generally found whole. They vary very much in form. Sometimes the sides are as straight as the figure given in the Journal of the Academy, 1st ser., v. 6, pl. 3, f. 1; while other specimens are much more orbicular than the figures of the form referred by Dr. Morton to *T. perovalis* of Sowerby, and afterwards called *T. camilla*. The convexity of the valves varies, although generally the wider the shell, the flatter is the surface of the valves. Sometimes again, they show no traces of plications, and at others they are strongly plicate. I have made a careful comparison of nearly a hundred specimens of this and the form called *T. fragilis* by Dr. Morton, and I am compelled to believe, against my preconceived ideas to the contrary, that they are only wide varieties of the same species. True, there is no difficulty in separating the typical forms of the two, so-called, species; but, after so disposing of two-thirds of the specimens, I found some of the same size and shape as *fragilis* with no plications, except the faint ridges of the typical form of *Harlani*, while others, having all the other characters of *T. Harlani*, have plications nearly as deep as Dr. Morton's type of *T. fragilis*. The specimens of the latter form are not so common as the other. M. d'Orbigny, in *Prodrome de Pal. Strat.*, proposes the name *subfragilis* in place of *fragilis*, which was pre-occupied by Schlotheim. I have never seen this species, except from New Jersey and Delaware.

T. Wacoensis, Rœm. Kreid. Tex., p. 81, pl. 6, fig. 2.
Appears to be common in Texas.

T. Leonensis, Con. Emory's Report, v. 1, p. 164, pl. 21, f. 2.
Very closely related to *Wacoensis*, but appears to be longer and more narrowed anteriorly. I am only acquainted with this species by means of the description and figure quoted above.
Locality. Texas.

T. Choctawensis, Shumard. Marcy's Report, p. 195, pl. 2, f. 3.
From the description given of this species, it would appear to be distinct from *T. Wacoensis*, but I have specimens in my collection intermediate in form between the two. The figure given is almost useless for the purpose of identification, but seems to me to be nothing but a young specimen of Rœmer's species, a little more gibbous than usual. The slight difference of outline is not of enough importance to warrant their separation.

T. Guadalupæ, Rœm. Kreide. von Texas, p. 82, pl. 6, f. 3.
Resembles a *terebratulina*, especially in the hinge margin of the ventral valve; but if the figure is correct, in regard to the form of the area of the dorsal valve, it is a true Terebratula.

TEREBRATELLA, d'Orb.

T. plicata, d'Orb. Prod. Pal., v. 2, p. 259.
T. Sayi, Gabb, 1859. Cat. Cret., p. 17, Proc. Acad. Nat. Sci. 1859.
Terebratula plicata, Say. Silliman's Jour. v. 2, p. 43.
Terebratula Sayi, Morton. Synopsis, p. 71, pl. 3, f. 3, 4.
Common in New Jersey.

T. Vanuxemiana, d'Orb. Prod. Pal., v. 2, p. 259.
Terebratula, id., Lyell and Forbes. Quart. Jour. Geol. So., London, v. 1, p. 62.
Resembles the preceding species, but is undoubtedly distinct. It is found in New Jersey, but is rare.

TEREBRATULINA, d'Orb.

T. Floridina, d'Orb. Prod. Pal., v. 2, p. 258.
Terebratula, id., Morton. Synopsis, p. 72, pl. 16, f. 7.
From the Cretaceous limestone of Alabama.

T. lachryma, d'Orb. Prod. Pal., 396.
Terebratula, id., Morton. Synopsis, p. 72, pl. 10, f. 11, and pl. 16, f. 6.
Said by Dr. Morton to occur in South Carolina, and in Alabama, in beds, since referred to the Eocene. M. d'Orbigny places it in the lower Eocene. This is incorrect, since I have it from the Cretaceous marls of New Jersey.

T. Halliana, n. s.
Suborbicular, flattened, most convex near the upper portion. The sides slope towards the beak for about a third of the length of the shell. The lower portion of the shell is rounded, presenting a very obscure angulation where the lateral margins unite with the basal; basal margin faintly sinuous. Lower valves regularly but moderately convex, with the sinus only visible on the lower fourth; foramen moderately large, area high. Upper valve convex for half its length, but in old specimens flat or concave for the remainder: hinge margin of the upper valve sloping distinctly from the beak, laterally. Surface marked by numerous rounded dichotomous ribs, crossed by very fine concentric lines.
This species differs from *T. lachryma* in form, so that a glance will serve to distinguish it. It resembles *T. Floridana* in shape, but the outline is somewhat more rounded than the specimen figured in "Synopsis." It differs, however, in having a more distinct sinus, in being less gibbous, and in the ribs being more prominent, larger and not so numerous. It gives me great pleasure to dedicate this beautiful species to the most able student of American Brachiopoda, Prof. Jas. Hall, of Albany, N. Y.
Locality. New Jersey.
The only species of the family *Lingulidæ* yet known, is
Lingula subspatulata, Hall and Meek, 1855. Mem. Am. Acad., Boston, 2 s., v. 5, p. 380, pl. 1.

Pursuant to the By-Laws of the Academy, an election of the members of the Standing Committees for 1861 was held, with the following result:

ETHNOLOGY.

J. A. MEIGS,
S. S. HALDEMAN,
T. G. MORTON.

BOTANY.

E. DURAND,
J. DARRACH,
JOS. CARSON.

COMP. ANAT. AND PHYSIOLOGY.

JOS. LEIDY,
JAS. M. CORSE,
J. H. SLACK.

GEOLOGY.

ISAAC LEA,
CHS. E. SMITH,
J. P. LESLEY.

MAMMALOGY.

J. H. SLACK,
JOHN CASSIN,
J. L. LE CONTE.

MINERALOGY.

WM. S. VAUX,
J. C. TRAUTWINE,
T. D. RAND.

ORNITHOLOGY.

JOHN CASSIN,
THOS. B. WILSON,
S. W. WOODHOUSE.

PALAEONTOLOGY.

JOS. LEIDY,
T. A. CONRAD,
WM. M. GABB.

HERPETOLOGY & ICHTHYOLOGY.

R. BRIDGES,
J. CHESTON MORRIS,
J. L. LE CONTE.

PHYSICS.

B. HOWARD RAND,
WM. M. UHLER,
JAMES C. BOOTH.

CONCHOLOGY.

T. A. CONRAD,
W. G. BINNEY,
C. J. CLEBORNE.

LIBRARY.

WM. S. VAUX,
JOS. LEIDY,
J. D. SERGEANT.

ENTOMOLOGY AND CRUSTACEA.

ROBERT BRIDGES,
J. L. LE CONTE,
E. T. CRESSON.

PROCEEDINGS.

J. L. LE CONTE,
JOS. LEIDY,
WM. S. VAUX.
JAS. C. FISHER,
THOS. STEWARDSON.

[Jan.